



# **Key EPA Internet-Based Tools**

for

# **Watershed Management**

*Overview Level Course Tutorial*



## **Key EPA Internet Tools for Watershed Management**

### **(Overview Course Tutorial)**

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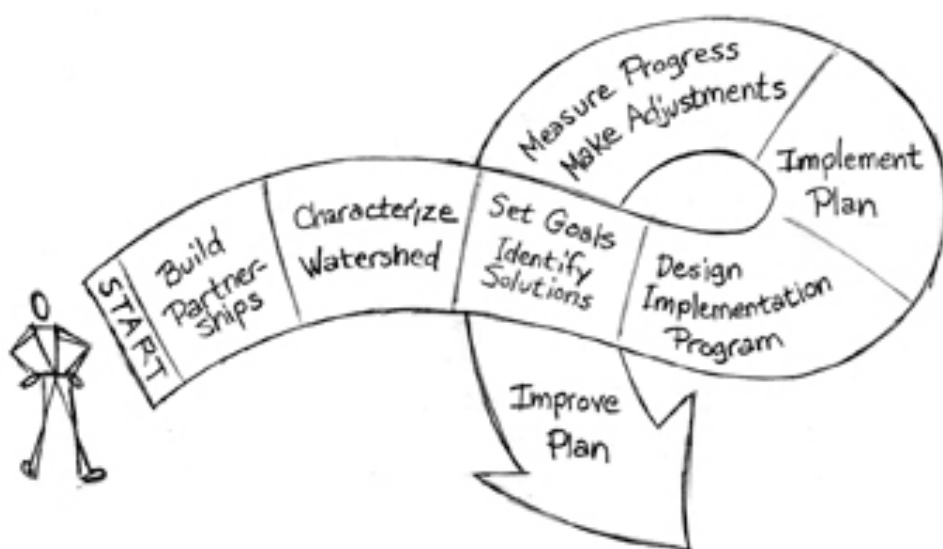
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## Tutorial Description

This tutorial will cover how to access and use EPA's Web-based applications and resources that support the development of watershed-based plans to better manage your water resources. EPA recommends using the following six steps in developing a watershed plan:

1. Building Partnerships
2. Characterizing Your Watershed
3. Setting Goals and Identifying Solutions
4. Design an Implementation Program
5. Implement the Watershed Plan
6. Measure Progress and Make Adjustments (adaptive management)



This tutorial follows this six-step framework. Tools and resources are introduced under the appropriate step. However, keep in mind that the tools and applications you learn about may be relevant for more than one particular step.

The six steps of developing a watershed plan

### Intended Audience

This course is an introductory-level course appropriate for individuals interested in leveraging Web-available information and data to help with watershed analysis and planning. It is also appropriate for government and non-government program managers and staff responsible for watershed analysis and planning. A more in-depth course is available as a follow-up to this course.

### Tutorial Resources

- Resource Listing for Key EPA Internet-based Tools for Watershed Management (in your course packet)
- Draft 'Handbook for Developing Watershed Plans to Restore and Protect Our Waters' ([www.epa.gov/owow/nps/watershed\\_handbook](http://www.epa.gov/owow/nps/watershed_handbook))

## Materials

- This interactive exercise. Please note that throughout the exercise you will find **bolded text questions**. In order to help you better grasp the material, please try to answer all of these questions.
- EPA Watershed Tools (EPA 841-B-06-002, May 2006)
- Watershed Academy Web (EPA 841-F-04-001, March 2004)
- Watershed Academy Web on CD (EPA 841-C-03-001, July 2003)
- Watershed Academy Webcasts (EPA 841-K-06-001, December 2006)
- EPA Watershed Training Opportunities (EPA 841-B-06-001, February 2006)
- Adopt Your Watershed (EPA 840-F-05-004, July 2005)
- Catalog of Federal Funding Sources for Watershed Protection (EPA 841-F-03-001, March 2003)
- WATERS flyer
- Watershed Plan Development Tool flyer
- NPSInfo Fact Sheet

## Step 1: Building Partnerships



### How to Surf for Information about Your Watershed

The *Surf Your Watershed* Web resource allows you to locate and find your watershed through an interactive map or through your place of choice. It allows you to find the 8-digit hydrologic unit code (HUC). Hydrologic units are subdivisions of watersheds listed from largest to smallest areas and are used to organize hydrologic data. In 'Surf Your Watershed' watersheds are organized within a geographical context; you can easily find the counties that intersect your watershed and find neighboring upstream and downstream watersheds.

The watershed is the organizing principle of this Web site. One of the most helpful aspects about the *Surf Your Watershed* Web resource is that it unites different programs that operate under the umbrella of the watershed paradigm. Because of inter-federal agency partnerships among the U.S. Geological Survey, the U.S. Department of Agriculture, and the U.S. Environmental Protection Agency, *Surf Your Watershed* is a portal to those other agency Web sites that offer data and resources on the watershed of choice. For example, you can link to USGS databases of stream gage stations in a particular watershed and gather flow measurements that are being logged in the watershed.

The *Surf Your Watershed* Web resource gives you an overview of watershed-related activities that you should, at least, be aware of if you are doing watershed assessments or plans that include monitoring or restoration activities. Let's begin to 'Surf Your Watershed'.

- 1.1 Please go to the following URL: <http://cfpub.epa.gov/surf/locate/index.cfm>
- 1.2 Within the colorful map click on the state of **New Mexico**. This takes you to the state profile page which includes a lot of valuable links. Please take a moment to explore a few of these links.
  - Particularly useful are the links provided underneath the **Places Involving this State** heading. Click on the hyperlinked number next to **Watersheds**. Once you arrive at the list of watersheds page you can click on any of the hyperlinked HUC8 codes to get to individual watershed profile pages.
- 1.3 Use your browser's back button to return to the main **Surf Your Watershed** page. Underneath the heading 'Find Your Watershed→Step 1 (Pick your Geographic Unit)', highlight 'County Name' from the menu.
- 1.4 Then, type in your **County Name** (e.g. Fairfax, Pitt, Essex, Orange etc.).  
**Note:** Do not add a comma and a state abbreviation.
- 1.5 Click the **Submit** button next to step 2 to see the list of counties with the name you entered.

- 1.6 Find the hyperlinked County Name and state combination you intended to find and click on it. (Note: We are using County to differentiate among different places)

You should get a map of the county and any overlapping HUC8 watershed boundaries.

**How many watersheds intersect your county?** \_\_\_\_\_

- 1.7 Find the HUC8 watershed number that overlaps your location (*Note: The map is not hyperlinked, so you will get an error if you select the watershed on the map.*)
- 1.8 Click on your selected hyperlinked HUC8 watershed number below.

**Write the 8-digit HUC watershed number here:** \_\_\_\_\_

- 1.9 This opens the **Watershed Profile** for your selected watershed.
- 1.10 Scroll down and note the upstream and downstream watershed names:  
**Upstream Watershed:**

\_\_\_\_\_

**Downstream Watershed:**

\_\_\_\_\_



## How to find Stream Gage Data from the USGS

- 1.11 Be sure you are still on the **Watershed Profile** page.
- 1.12 Scroll down to **Information Provided by the United States Geological Survey** (USGS) and click on [Stream Flow](#).
- 1.13 Click on a hyperlinked Stream Gage Station Number. Scroll down to see a graph of real-time data (this shows the stream gage height at the sampling site; other parameters may include precipitation and discharge).
- 1.14 At the top of the page in the blue bar, click on the drop-down list next to '**Available data for this site**' to see other data.
- 1.15 Select **Daily Data**. When the page refreshes, focus on the data summary table at the top. Change the **Begin Date** and **End Date** to get one month only.
- 1.16 Change the Output Format from Graph to **Table** to get individual readings. Click on the 'Go' button, to look at one month's gage readings.
- 1.17 Use the browser's Back button to return to the **Watershed Profile** page.



## How to Find Partners at Work in Your Watershed

Finding information about existing watershed efforts helps you connect with people who are already interested in the watershed issues you are working on. Forging partnerships with others who care about your watershed will help you benefit from economies of sharing resources (e.g., membership databases, or the knowledge base of those who have already worked with state agency programs).

- 1.18 Once you are back to the **Watershed Profile** page, click on the hyperlink: [Citizen-based Groups at work in this watershed](#). This results in a listing of any groups who are in the 'Adopt Your Watershed' database, a directory of citizen-based groups working on watershed and water resource monitoring and protection issues.  
*Note: You may find that no group is found for your watershed.*
- 1.19 On the left hand side-bar, click on the Add Your Watershed Group link. This will bring you to a form you can fill out to add information about your program.
- 1.20 Go back to the results page that lists watershed groups within your watershed. If your group already exists, you can edit its information simply by clicking on **Group Name** link.
- 1.21 Now, use your browser's back button to return to the [Surf Your Watershed](#) home page.
- 1.22 Scroll down to the US Map and click on the state of Arizona.
- 1.23 Scroll down the page to find the **Environmental Information** heading. Click on the **Watershed Groups for this State** link.

How many groups are listed for Arizona? \_\_\_\_\_



## How to Connect with Existing State and Federal Programs

It may be possible to connect existing environmental programs with state and federal funding that have opportunities for citizen involvement. A good example is an estuary program.

- 1.24 On the left-hand sidebar, click on **Surf Your Watershed** (URL: [www.epa.gov/surf/](http://www.epa.gov/surf/)). Within Step 1, highlight **City Name** as your geographic unit.
- 1.25 Type **Thibodaux** into the Step 2 box. Press the **Submit** button.
- 1.26 Your search result should come up with the HUC8 Watershed code for the watershed that intersects the city of Thibodaux, Louisiana.  
**What is the HUC8 code?** \_\_\_\_\_

- 1.27 Select the watershed that intersects Thibodaux, LA and click on the link [Environmental Websites Involving this Watershed](#). Notice that 4 Web sites are listed.
- 1.28 Scroll down to click on the link: [National Estuary Programs: Gulf of Mexico Region](#). Notice that there are several program offices for the National Estuary Program in this region.
- 1.29 On the map, click on the dot on the map over **Barataria-Terrebonne**.
- 1.30 You will now exit EPA's site and go to their program Web site.
- 1.31 Click on the **Volunteer Opportunities** link on the top banner. You can find opportunities to work with existing programs on estuary pollution and restoration issues.
- 1.32 Click on the browser's Back button and then click on the **Grant Opportunities** link on the top banner. Notice that there are grant monies available to small groups interested in working on estuary protection and restoration.



## How to Make Connections via Electronic Discussions

When looking for partners, your zip code should not be a limiting factor. The EPA has a number of **electronic discussion lists** on the topic of watersheds and water protection. By joining electronic discussions, you will become part of a large and instantaneous communication network of water quality professionals and watershed practitioners. It is the most efficient way to keep abreast of upcoming workshops, conferences, case studies, resources, and grants, and to benefit from others' on-the-ground experience.

- 1.33 Go to the following link: <http://www.epa.gov/owow/watershed/links.html>. Notice all of the links listed on this page, including *Surf Your Watershed*.
- 1.34 Underneath the heading EPA Watershed-related Web sites, click on the [Watersheds](#) link.
- 1.35 Click on the drop-down list in the middle of the page and select **Who's talking about my watershed?** This will bring you to the 'Listserve' page.
- 1.36 Click on [Watershed News](#). This is a monthly electronic newsletter for people working at the watershed level including opportunities for training on watershed topics, resources and grants available for watershed protection, and news from other watershed efforts (Note: you can also access archived information).
- 1.37 Click on your browser's Back button to return to the 'Listserve' page and click on [Non-Point Source Information \(NPSInfo\): e-mail listserver](#). NPSINFO is an online forum for open discussion of runoff pollution issues, including unregulated nonpoint source (NPS) pollution, and regulated stormwater. Over 1600 people are signed on to this list, and the daily traffic on this e-mail

listserve covers issues faced by professionals and practitioners of water pollution control, announcements of meetings, workshops, and other opportunities such as free materials developed by public agencies available for use.

- 1.38 Click on the [Joining NPSInfo](#) hyperlink to get information on how to subscribe to this list.

**Write down the e-mail address to join NPSInfo:**

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**What do you put in the e-mail to join NPSInfo?**

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- 1.39 Click on your browser's Back button to return to the 'Listerves' page.
- 1.40 Click on [EPA Public Listservers](#). (Note: this is a security enabled site so click on OK to get past the dialog box if it appears.)
- 1.41 Click on the **Show More** button at the bottom of the list and scroll down to **volmonitor** towards the bottom of the list.
- 1.42 Click on **subscribe** in the right hand side column. This will give you the interface to set an e-mail-based username and password. If you chose to subscribe here by providing an e-mail address, you will start receiving messages from the volmonitor e-mail listserver.



### **Read All About it: EPA's Nonpoint Source News-Notes**

*News-Notes* is a quarterly publication sent out by EPA's Office of Wetlands, Oceans and Watersheds on subjects such as innovative pollution control measures, new management techniques, and innovative funding schemes used by groups to address water pollution. It has a variety of news and features related to water quality and nonpoint source pollution control. This is a free resource published by the EPA.

- 1.43 Please go to the following URL: [www.epa.gov/owow/info/NewsNotes/](http://www.epa.gov/owow/info/NewsNotes/).
- 1.44 Click on the link to the current issue. Within the bookmark links to the left, scroll down to **Reviews and Announcements** and click on some of the associated sub-bookmarks to scroll through some recent announcements.
- 1.45 Use your browser's back button to go back to the *News-Notes* home page.
- 1.46 Type '**watershed restoration**' into the search criteria box and click 'go'. You should see over 350 publications that mention this topic.



## Step 2: Characterizing the Watershed

In order to develop the scope of the watershed planning effort or your waterbody restoration projects, you will need to characterize the watershed. By characterizing the watershed you can (1) define the issues of concern, the key pollutants and sources of pollution; (2) assess watershed geographic conditions, economic activities, and discharges that may affect water pollution; and (3) figure out where to target restoration efforts.

One way to start characterization is to evaluate data available in EPA's national water quality databases where state agencies report information on their waterbodies, as mandated by law. We will look at the **following three sources of information** to help establish the condition of a waterbody using EPA's interactive online database queries and mapping applications: (1) Water Quality Standards, (2) Waterbody Assessment Information, and (3) Impaired Waters/TMDLs.



### Water Quality Standards: Find the Designated Uses of a Waterbody

- 2.1 Open the following Water Quality Standards database (URL: [www.epa.gov/wqsdatabase/](http://www.epa.gov/wqsdatabase/))
- 2.2 Click on **Reports** on the left-hand sidebar.
- 2.3 Let's first look at all the various combinations of designated uses for a particular state. Click on the link for [Designated Use and Class Data by State](#) (1<sup>st</sup> link).
- 2.4 Choose **Florida** from the pick list.

How many different **State DU Names** exist in the state of Florida? \_\_\_\_\_

- 2.5 Use your browser's back button to return to the Reports page.
- 2.6 Click on [Designated Use and Class Data by State Waterbody](#) (3<sup>rd</sup> link).
- 2.7 Choose **Florida** from the pick list and scroll down to the Waterbody Names pick list towards the bottom of the page.
- 2.8 Select '**Woods Creek.**' And click on the **Run Report** button. Notice the full description of each designated use.

**What are the 3 state designated uses for the segments of this waterbody?**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_



## Assessment Information: Access State Water Assessments

The National Assessment Database allows you to see how the condition of the nation's assessed waters are evaluated and ask questions such as 'is a waterbody meeting its designated uses or not'?

- 2.9 Open the 2002 National Assessment Database (URL: [www.epa.gov/waters/305b/](http://www.epa.gov/waters/305b/)). Within the box to the right, click on the '**About this Database**' link. This page provides an overview of the data that is reported here and what information you can extract from the data, as well as an explanation of terms used about water quality such as 'good', 'threatened', or 'impaired'. (URL: [www.epa.gov/waters/305b/about.html](http://www.epa.gov/waters/305b/about.html))

*Use the keyboard shortcut for the menu item (under Edit) for Find (on This Page): "CTRL + F"*

**How is 'impaired' defined?**

---

**How is 'threatened' defined?**

---

- 2.10 Click on the browser's Back button to start to use some of the features of this interactive summary of state-reported water quality information.
- 2.11 On the U.S. map below, click on the State of **Massachusetts**, by clicking on the box 'MA'. We are interested in the **Bays and Estuaries** (a sub-heading under the Water Quality by Waterbody Type bullet).
- 2.12 Click on the link underneath **Bays and Estuaries** called: [Individual Use Support for Assessed Waters](#). Get an overview of the condition of the assessed waters in terms of their support for four designated uses of **Bays and Estuaries**.
- 2.13 Scroll down to look at the other summary tables for Bays and Estuaries in Massachusetts.

**What are the three top impairment causes?**

1. 

---
2. 

---
3. 

---

**What are the three top probable sources of impairments?**

1. 

---
2. 

---
3. 

---



## How to Link to a State's Detailed Water Assessment Report

To get more information at the state level, we will leave EPA's Web site and link to the state's own Web site. (Note: Each state may vary in the way it organizes its information.)

- 2.14 Click on the browser's Back button to get back to the National Assessment Database and click on the state of **Idaho**.
- 2.15 Scroll down on the page to find the **State of Idaho Websites** heading, click on the [State 305\(b\) Water Quality Assessment Report\(s\)](#) link. This will take you to the Idaho Department of Environmental Quality Web site.
- 2.16 On the left side-bar, click on the [Water Quality Improvement Plans \(TMDLs\)](#) link.
- 2.17 Then, on the left side-bar underneath '**See Also**', click on the [List of Subbasin Assessments, TMDLs, and Implementation Plans in Idaho](#).
- 2.18 A table should appear in the bottom half of the page that shows a list of Reports sorted by TMDL Name. Click on the **Big Lost River** link. Peruse the information presented for this area.
- 2.19 Scroll down towards the bottom of the page to find the links to the PDF versions of the report. Click on the **Entire Document** link to download the PDF. If you are interested in putting together a watershed plan, you would look closely at these reports.



## Impaired Waters/TMDLs: Find Information on Impaired Waters

- 2.20 Open the Impaired Waters Database ([www.epa.gov/owow/tmdl/](http://www.epa.gov/owow/tmdl/)). Notice that the left-hand sidebar link [Intro to TMDLs](#), gives an overview, explanation of terms, and current regulations on Total Maximum Daily Loads. You can also listen to an archived Webcast to learn the basics of TMDLs and their methodologies and practices.
- 2.21 We are going to look at impaired waters and TMDL studies in the State of **Virginia**. On the map, click on the State of **Virginia** (VA).  
**Note:** *Be sure that you are clicking on the state and not the EPA Regional number 3.*
- 2.22 Scroll down and look at each summary table.
- 2.23 Stop at the table **Causes of Impairment** or click on the corresponding jump-to link at the top of the page.

**What pollutant is responsible for the highest percentage of impaired waters in the state?** \_\_\_\_\_

- 2.24 Click on the **number next to the bar graph** for Pathogens to see the individual waterbodies listed for Pathogen impairment and associated TMDL activity.

**Which state basin is Sugarland Run located in?** \_\_\_\_\_

- 2.25 Click on the browser's Back button to the listing of results for the State of Virginia.
- 2.26 Scroll *up* to the table **Waters Listed by Watershed**.
- 2.27 Find the watershed and click on the link for: **Middle Potomac-Anacostia-Occoquan**. This opens a page where you can launch a map interface to look at the waters in that subwatershed. It also lists all the impaired waters in that watershed, causes of impairment, and TMDL studies organized by pollutant.
- 2.28 Scroll down the page to the table of waterbodies and find the **Lower Anacostia River**. Click on the linked '1' underneath the '**Waters on List**' column to get to the Impaired Waters page for this river. Drill down by clicking on the result again.

**For how many total pollutants has a TMDL study been established?**

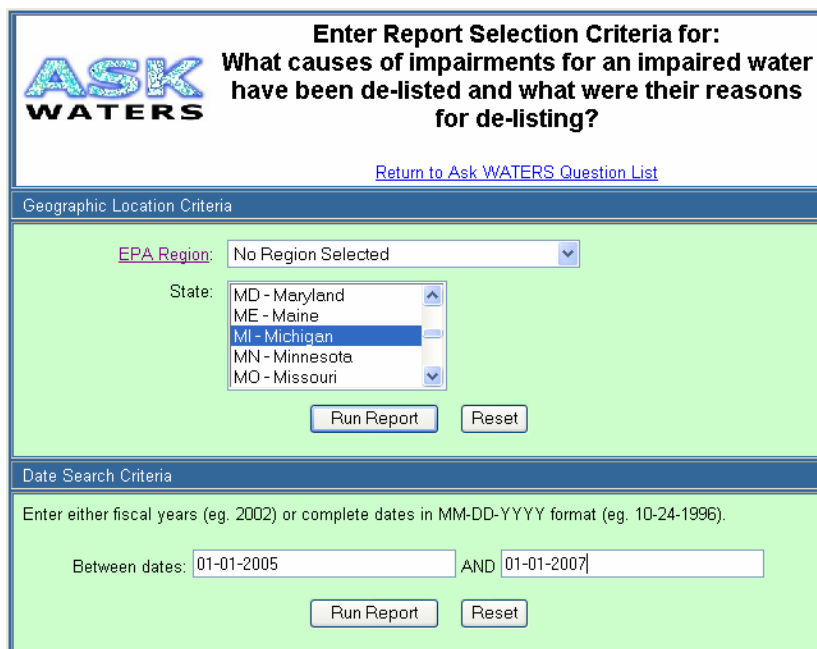
\_\_\_\_\_



### **Integrated Reporting Tool: Ask WATERS**

EPA offers reports that integrate data from different databases such as ones you have encountered so far. In this exercise, we will look at one tool that gives such integrated reports.

- 2.29 Open the Watershed Assessment and Tracking Environmental Results URL: ([www.epa.gov/waters](http://www.epa.gov/waters)) In WATERS, individual waterbodies are linked to data from multiple, independent databases to integrate various information.
- 2.30 On the left side-bar, click on **Tools**.
- 2.31 Within the middle of the page, click on the **Ask WATERS** link.
- 2.32 Then, within the light blue box, click on **Simply Query** which will bring you to a green and blue table of questions.
- 2.33 Click on the What causes of impairments for an impaired water have been de-listed and what were their reasons for de-listing?



**ASK WATERS**

**Enter Report Selection Criteria for:**  
**What causes of impairments for an impaired water have been de-listed and what were their reasons for de-listing?**

[Return to Ask WATERS Question List](#)

**Geographic Location Criteria**

EPA Region: No Region Selected

State: MD - Maryland  
 ME - Maine  
**MI - Michigan**  
 MN - Minnesota  
 MO - Missouri

Run Report Reset

**Date Search Criteria**

Enter either fiscal years (eg. 2002) or complete dates in MM-DD-YYYY format (eg. 10-24-1996).

Between dates: 01-01-2005 AND 01-01-2007

Run Report Reset

- 2.34 Select **Michigan** from the list of states and regions.
- 2.35 Type in a date range: **01-01-2005** to **01-01-2007**.
- 2.36 Click on **Run Report**.
- 2.37 The resulting listing shows individual waterbodies each of which has additional information: the state's waterbody identifier code, the reporting cycle during which the water was listed, the cause of impairment, the date on which the waterbody was 'de-listed', and the basis on which the water was 'de-listed'.



## How to Find Map-Based Water Quality Information

*EnviroMapper* offers simple map tools you are familiar with from other programs like 'MapQuest' and ArcMap such as zoom in, identify features, and display layers.

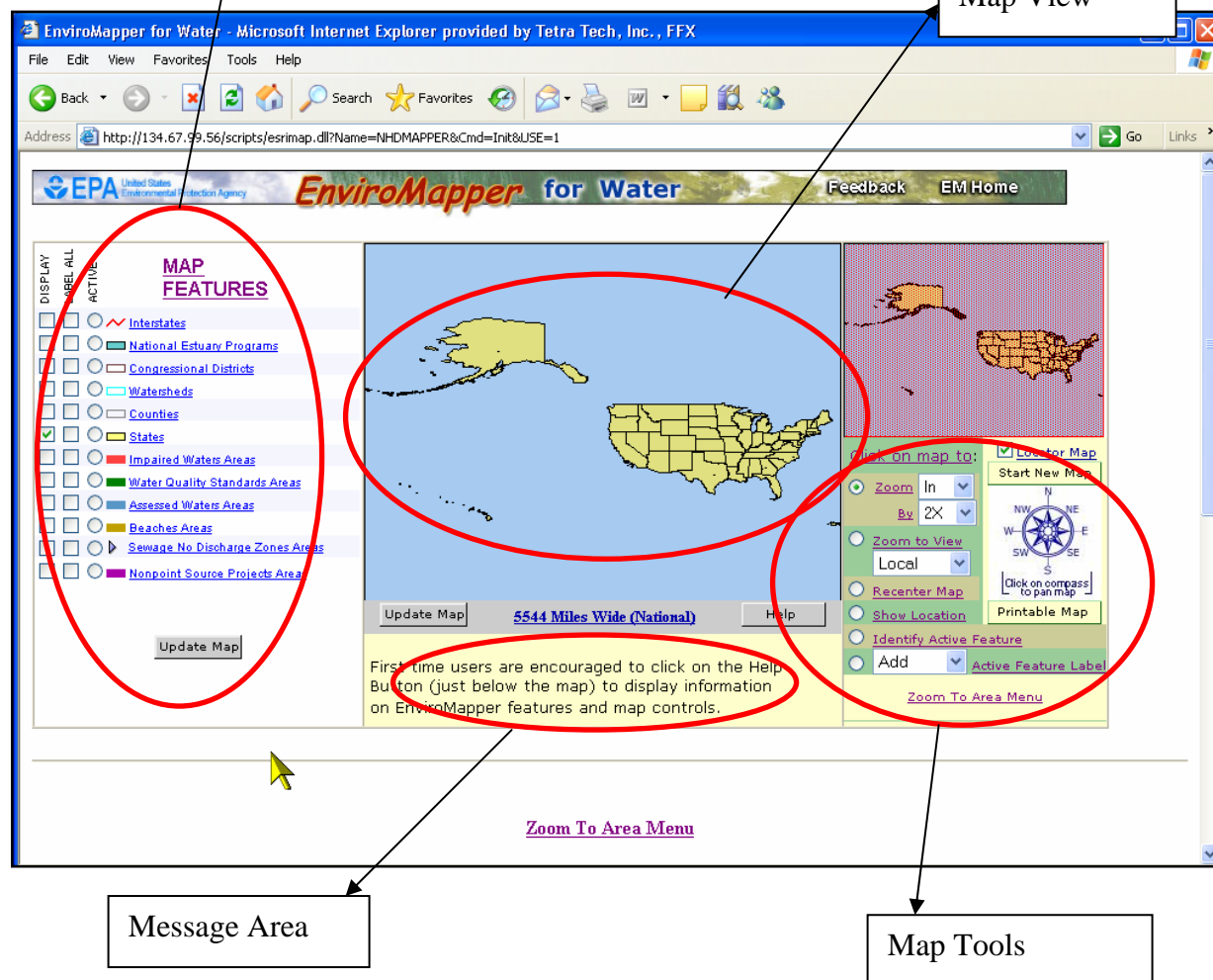
*EnviroMapper* is not only a map-based interface to visualize and display different geographic information but it goes deeper because through the map, you can access data stored in EPA's water program databases (e.g., Water Quality Standards, Impaired Waters/TMDL, Point Sources, Waterbody Assessment, and Water Quality Monitoring).

- 2.38 Open *EnviroMapper*. (URL: [www.epa.gov/waters/enviromapper](http://www.epa.gov/waters/enviromapper)). Notice that there is a Video Demo as well as a Training Exercise which you can use in your own time to learn how to use *EnviroMapper*.
- 2.39 Click on the image on page left, to enter *EnviroMapper* (this takes a few seconds). The *EnviroMapper* interface you will see includes a **Map View** in the middle, **Map Features** on the left with geographic data layers to display in the

Map View, and **Map Tools** on the right (such as zoom in, identify and re-center).

Map Features/ Geographic Data Layers

Map View



Message Area

Map Tools

2.40 Click on the 'Help' button at the bottom of the Map View to open a separate pop-up window.

When using *EnviroMapper* for the first time, please click on the **HELP** button at the bottom of the map view to get information about the recommended Internet Browsers, screen size, and other technical requirements for running *EnviroMapper*. Without the basic requirements to run *EnviroMapper*, you may not get the results you expect.

In this exercise we will be displaying different **Map Features** in the **Map View** and explore these features using **Map Tools**. Detailed explanations of all these features and tools are provided in the help.

- 2.41 Scroll down and click on 'Tips for Using *EnviroMapper for Water*'. Under 'Map Control Basics' you will learn the basic functions of controls in the interface.

**How many items can be selected using a toggle button or a radio button?**

---

Help also gives you information on the architecture of the databases that describes how the mapping application links to EPA's water program data. Different EPA programs have linked their information to the surface water Map Feature: the National Hydrography Dataset. Because of this linking, *also known as geographic indexing*, you are now able to access multiple program information through a waterbody, or point that you interactively select on the map. Close the Help pop-up window.

- 2.42 You are now looking at a map of the entire United States. Take a minute to understand the interface components highlighted in the screenshot above.

**What is the View Scale of the Map View?**

---

- 2.43 On the checkboxes on the left, click to turn on the **Counties** Map Feature. Click on the **Update Map** button to display the Map Feature.



## How to Zoom to a Selected Place in EnviroMapper

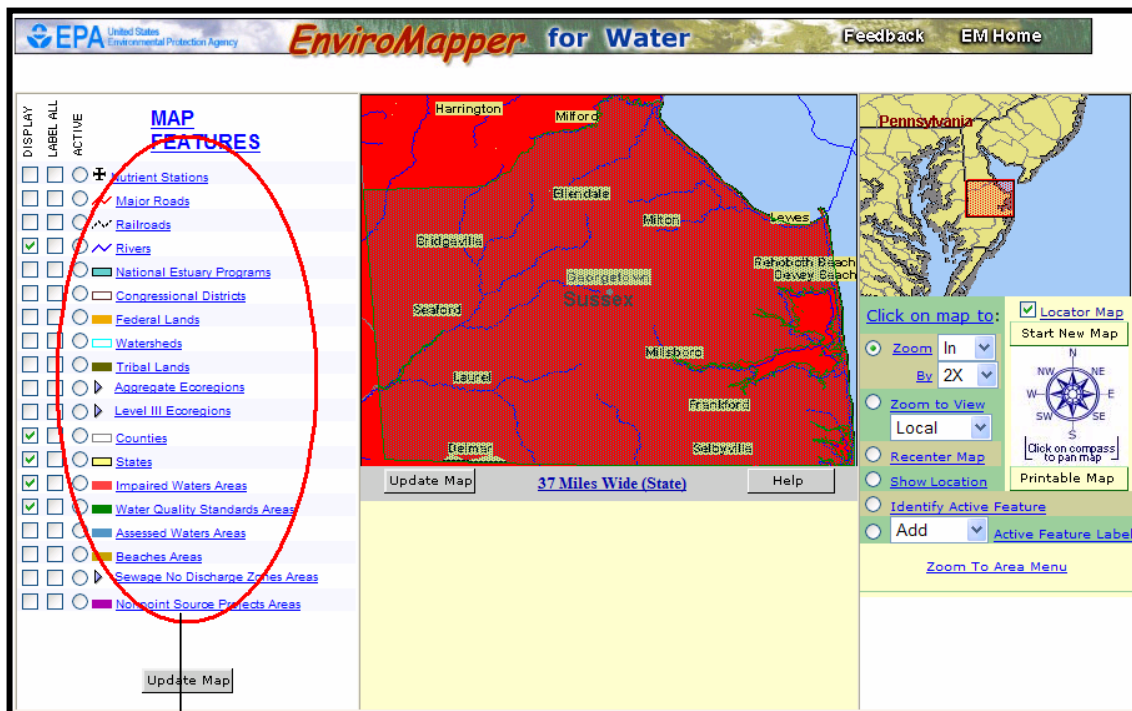
- 2.44 On the tools on the right hand side, click on **Zoom to Area Menu**.
- 2.45 Select the radio button **a County within the state of** and on the right-hand side select the State of **Delaware**.
- 2.46 Click on the button below called **Zoom to Selected Area** and select **Sussex** from the list of Delaware counties.
- 2.47 The map redraws so that it is centered on Sussex County.

[Zoom To Area Menu](#)

Click on the <b>Zoom To Selected Area</b> button to zoom to:	
<input type="radio"/> the <a href="#">State</a> of:	<div style="border: 1px solid black; padding: 5px;">             Alabama              Alaska              Arizona              Arkansas              California              Colorado              Connecticut  <b>Delaware</b>              District of Columbia              Florida              Georgia           </div>
<input type="radio"/> a <a href="#">County</a> within the state of:	
<input type="radio"/> a <a href="#">City</a> within the state of:	
<input type="radio"/> a <a href="#">Hydrologic Cataloging Unit</a> within the state of:	
<input type="radio"/> a <a href="#">ZIP Codes</a> (5 digits):	<input type="text"/>
<input type="radio"/> an <a href="#">EPA Region</a> :	Select EPA Region <input type="text"/>
<input type="radio"/> a <a href="#">National Estuary Program</a> :	Select National Estuary Program <input type="text"/>
<input type="radio"/> an <a href="#">Aggregate Ecoregion</a> :	Select Aggregate Ecoregion <input type="text"/>
<input type="radio"/> a <a href="#">Level III Ecoregion</a> :	Please select a Level III Ecoregion <input type="text"/>
<input type="radio"/> an <a href="#">Area Centered at Latitude and Longitude</a> : (in Degree° Minute' Second" format)	Latitude: <input type="text"/> DD <input type="text"/> MM <input type="text"/> SS SS " Longitude: <input type="text"/> -DDD <input type="text"/> MM <input type="text"/> SS SS "
<input type="button" value="Zoom To Selected Area"/>	

## View Scale Determines Available Map Features

Notice that there are more map features available in the legend on the left hand side. As you zoom in, more map features become available because they are meaningful to display at more zoomed in scales.



More Map Features appear when the Map View is more zoomed in.

We are going to use a different zoom method now. Look at the Zoom Tool in the Map Tools area.

- 2.48 Make sure that the zoom is set to 'In' by '4X'. Click on the radio button next to **Zoom** if it is not selected automatically.
- 2.49 Using the pointer (finger) Click on the town of **Seaford**.

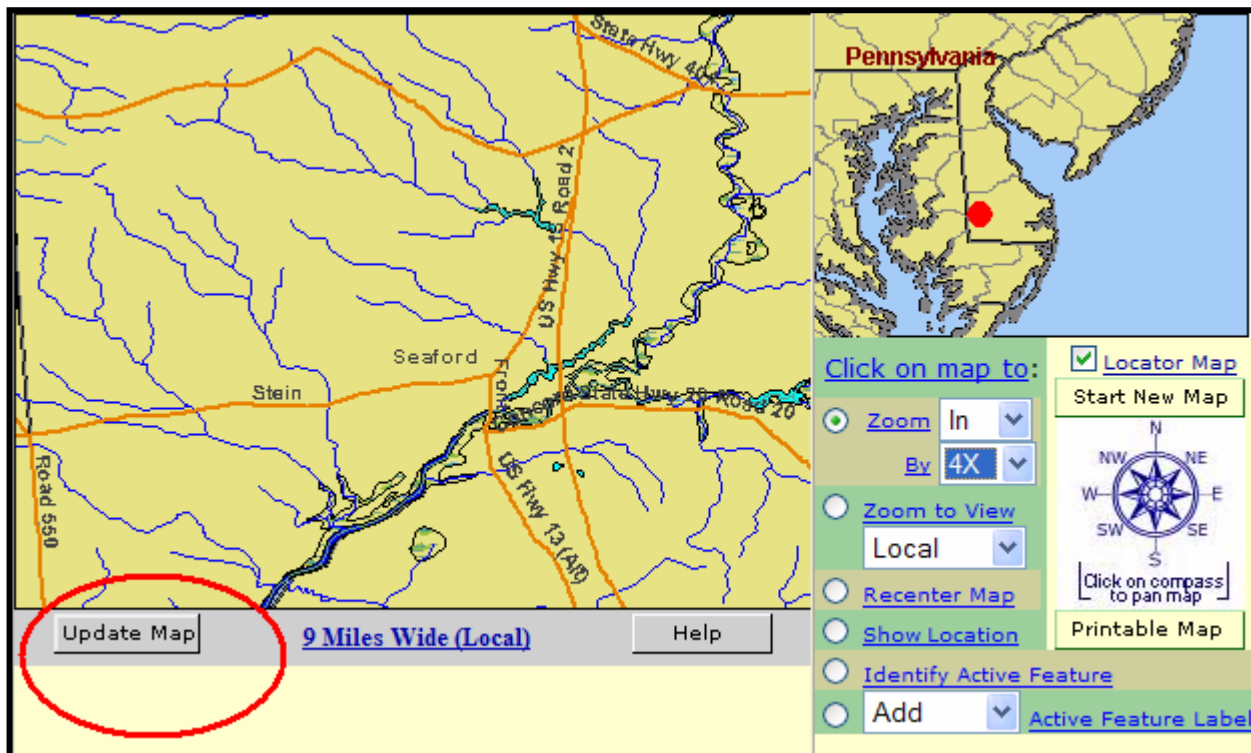
### What is the View Scale of the Map View?

- 2.50 On the left-hand side, click on the arrow next to **Surface Waters**. Notice the many water features that are part of the National Hydrography Dataset (NHD), which is the geographic data set used in this map application.





- 2.51 Find the **Streets** Map Feature. Uncheck the check box to turn the 'Streets' Map Feature off (if it is turned off it will not be displayed).
- 2.52 Find the **Impaired Waters** Map Feature. Click on the check box to turn on the Impaired Waters Map Feature.
- 2.53 Also, click on the **Radio button** next to the **Impaired Waters** Map Feature. This makes the Impaired Waters Map Feature the 'Active Data Layer'. (It is in the nature of mapping that Map Features (or individual geographic data layers) lie on top of each other, so we have to specify which data layer we want to work on by making it the 'Active Map Feature' or 'Active Data Layer').
- 2.54 Click on the **Update Map** button.





## How to use EnviroMapper to Query Impaired Waters in an Area

Which Map Tool is currently activated?

- 2.55 In the Map Tools area, click on the hyperlinked words '**Identify Active Feature**'. This opens up a Help pop-up window to explain that Map Tool. We will activate that Map Tool. Close the Help, and click on the radio button next to 'Identify Active Feature'.
- 2.56 Move the pointer (finger) to the red-color impaired waterbody which runs south and west of Seaford. Click on the waterbody.
- 2.57 When the map redraws, notice that the line becomes yellow because it is 'selected'. The map feature is identified as DE240-008 (A). The selected feature is also listed below in the message area, as a hyperlink.

Message Area describes the selected Active Data Layer feature.

- 2.58 The active Map Feature information is listed and hyperlinked first in the Message Area. As a bonus you get more information than just the active Map Feature. Additional water program data are also available for the same selected segment. The data are from the Water Quality Standards Database. This is listed below as the hyperlink DE240-008 (A).
- 2.59 Click on the hyperlink listed below the Map View as '**Impaired Waters features: DE240-008 (A)**'. This opens up a data query result from the national database of Impaired Waters which we explored earlier. This result is a query on the specific waterbody selected through the map.

**What is the name of the waterbody?**

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**What are the main causes of impairment in this waterbody?**

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**Into which river basin does this creek flow?**

---

- 2.60 Close the pop-up window.
- 2.61 Check on the **Water Quality Standards** Map Feature and make it the Active Map Feature/Active Data Layer by clicking on the radio button next to it.
- 2.62 **Uncheck** the **Impaired Waters** map feature (to no longer display impaired waters)
- 2.63 Click on the **Update Map** button to display waterbodies with Water Quality Standards.
- 2.64 Click on the **Identify Active Feature** Map Tool on the right of the Map View.
- 2.65 Use the pointer (finger) to click on the waterbody that southwest the town of Seaford.
- 2.66 Click on the hyperlink in the Message Area below the Map View that reports the query of data from **Water Quality Standards** database.

**What are the designated uses of the waterbody?**

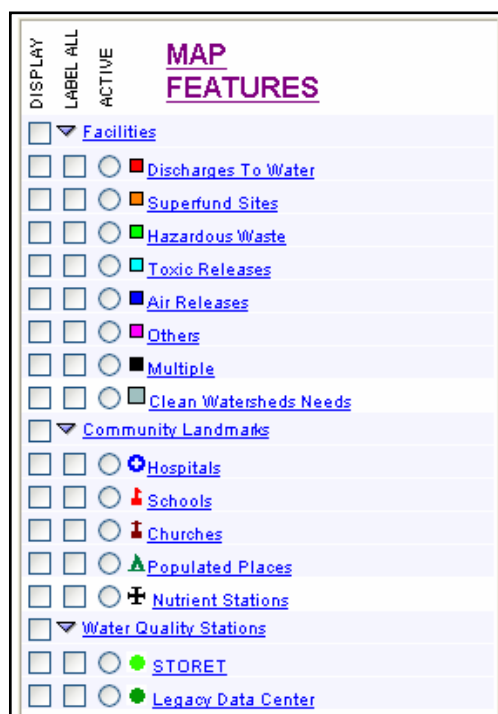
---

- 2.67 Close the pop-up browser window.



## How to Use EnviroMapper to Query the Map for Point Sources

We will now look at **point sources**, which is a term used to describe facilities such as industrial plants, businesses, institutions, and municipal treatment plants, if they are issued permits by states or EPA because their operations discharge effluent into waters of the U.S. Permits usually outline the terms and conditions under which effluent may be discharged.



- 2.68 On the left-hand side at the top, click on the arrow next to **Facilities**. This will unroll the different permitted point sources or facilities which EPA tracks in its national databases.
- 2.69 Click in the display checkbox next to **Discharges to Water**, in order to see that map feature in the Map View.
- 2.70 Click on the **radio button** next to Discharges to Water also, to make that the active map feature.
- 2.71 Click on the **Update Map** button.
- 2.72 Click on the Map Tool: **Identify Active Feature**.
- 2.73 Click on a point feature to select a feature on the map (you will see a yellow cross to indicate the selected feature). It also gives

you a data query result from the national EPA database called 'Permit Compliance System'. This data query result is the record in that database for the selected facility.

**What is the name of the selected facility?**

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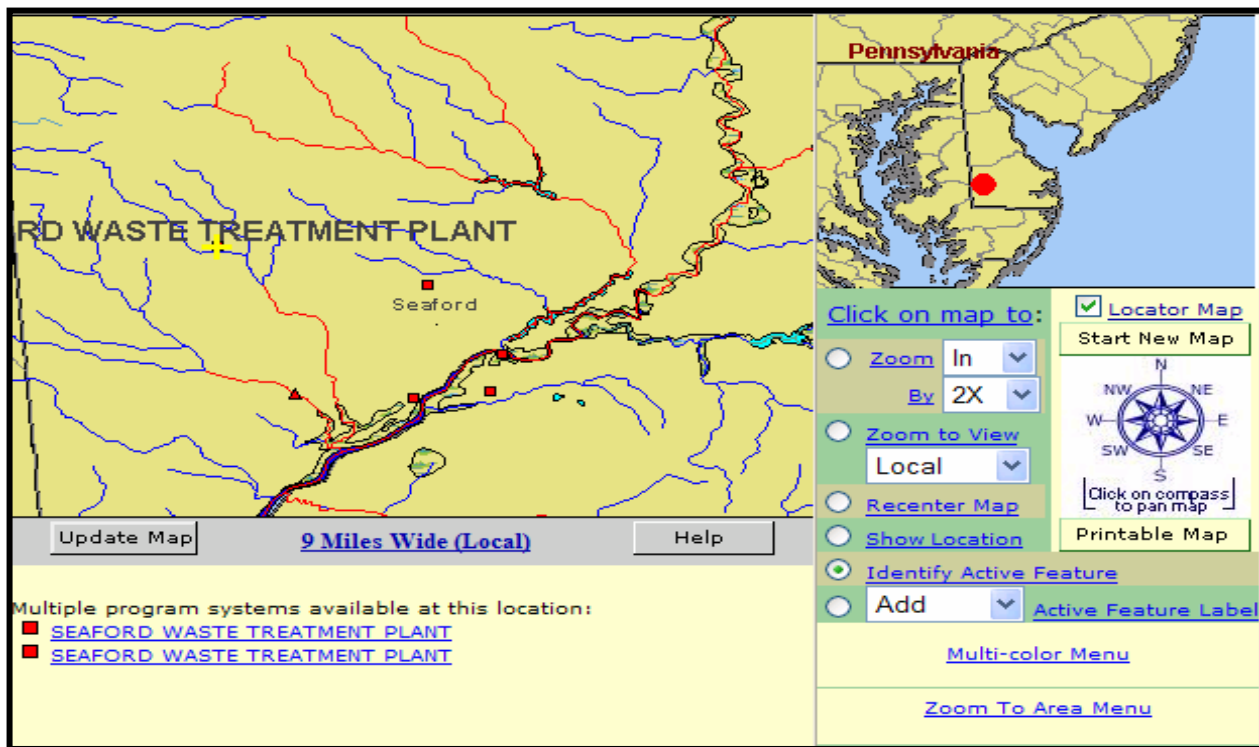
- 2.74 Click on the hyperlinked facility name below the Map View. This opens up a report which lists the overview information about that discharger, including the NPDES number (a permit number), the permit operation dates, and a description of the permitted discharges.

**What is the NPDES number?**

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**Is the facility currently active?**

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Note: If you click on the NPDES number, you can view even more detailed permit reports. (Not covered in this course.)



## Step 3: Set Goals and Identify Solutions

Goals for your watershed might involve conducting a TMDL study on a waterbody to quantify needed pollutant load reductions.

- 3.1 Go to the TMDL Page (URL: [www.epa.gov/owow/tmdl/](http://www.epa.gov/owow/tmdl/))
- 3.2 On the left side-bar, click on **Technical Support Documents**. These documents formally describe methodologies for developing TMDLs.



### How to Find Funding Sources for Watershed Management

EPA offers several resources to help locate the right funding sources for your particular watershed application.

- 3.3 Open the Watershed Funding page (URL: [www.epa.gov/owow/funding.html](http://www.epa.gov/owow/funding.html))
- 3.4 Scroll down and click on **Databases of Funding Opportunities**.
- 3.5 Click on the **Catalog of Federal Funding for Watershed Protection**.
- 3.6 For Type of Assistance, select **Grants**.
- 3.7 For Eligible Organization, select **Community/Watershed Group**.
- 3.8 For Match Required, keep the 'Select All' default choice.
- 3.9 For Keywords, check the **Watershed Management** checkbox.
- 3.10 Click on the button: **Get Results in List Format**.
- 3.11 Select a program to get more information. Drill down on the program name to get full details about that particular program.

**What is the application deadline for the program you selected?**

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(Hint you may have to investigate the program's own provided Web site.)



## EPA Training Opportunities for Watershed Management

Adequate training and awareness of new techniques and developments regarding watershed topics is essential to becoming successful at watershed restoration and planning. Several watershed training resources are at your fingertips through EPA's Web site.

- 3.12 Please go to the Watershed Academy URL:  
[www.epa.gov/owow/watershed/wacademy/](http://www.epa.gov/owow/watershed/wacademy/)
- 3.13 Click on Watershed Academy Web (URL: [www.epa.gov/watertrain/](http://www.epa.gov/watertrain/)). You can access the more than 50 self-paced training modules on topics such as 'Understanding Lake Ecology', and 'Introduction to the Clean Water Act.'
- 3.14 Find the **Watershed Change Modules** group.
- 3.15 Click the link to the [Growth and Water Resources](#) module.
- 3.16 Skim through the first few pages of this education resource.
- 3.17 On the third slide, within the right-frame, click on the internal link "**Changes Nationwide and by State**".  
([http://www.epa.gov/watertrain/smartgrowth/states\\_set.htm](http://www.epa.gov/watertrain/smartgrowth/states_set.htm))
- 3.18 Use the browser's Back button to return to Watershed Academy. (URL: [www.epa.gov/owow/watershed/wacademy/](http://www.epa.gov/owow/watershed/wacademy/))
- 3.19 Click on Webcast Seminars (URL: [www.epa.gov/owow/watershed/wacademy/webcasts/](http://www.epa.gov/owow/watershed/wacademy/webcasts/) or [www.epa.gov/watershedwebcasts/](http://www.epa.gov/watershedwebcasts/)).

These are free courses available to anyone who pre-registers to participate in a Webcast. National experts present topics on cutting edge tools, methods and new developments in the field of watershed science and management. You can step through a slideshow with live voice training that streams over the Internet, or listen to the training over the phone. Previous Webcasts are accessible as they are archived and are linked from this site. We will click to launch a previously completed Webcast so you can listen to it and follow along with the slides.

- 3.20 Scroll down the page to the heading '**Archived Versions of Past Webcasts**'.
- 3.21 Click on a Webcast of choice (e.g. Integrating Wetlands into Watershed Protection, May 17, 2006.).
- 3.22 Click on the '**Audio Version of the Webcast**' (You will exit the EPA site).
- 3.23 Scroll down and click on the button '**Go to Seminar**'.
- 3.24 Click on the loudspeaker symbol at the top of the slide in order to launch the audio portion of the Webcast. You will be prompted to step through the slides by the speaker, so you may use the forward button on the Web page itself to move to the next slide.

## Steps 4 & 5: Designing and Implementing a Program

A one-size-fits-all approach to implementing pollution reduction measures is rarely effective. Different parts of the country face different issues even in a given sector such as agriculture. For example, climate, soil, topography, and scale of operations vary in the agricultural practices of different regions. Recognizing this diversity, EPA has developed several publications that provide guidance on management measures to address water pollution from different sources such as agriculture, marinas and boating, forestry, and urban sources. These helpful publications cover considerations and recommendations for the design and installation of management measures and can serve as customizable templates for an array of circumstances. The publications are useful for developing ordinances as well as for use in standard operating practices. Their ease of use extends from local government to interested operators and citizens and the EPA provides them conveniently at no cost.

4&5.1 Please go to the National Management Measures to Control Nonpoint Source Pollution URL: [www.epa.gov/owow/nps/categories.html](http://www.epa.gov/owow/nps/categories.html). Notice the different pollution source categories for NPS Management.

4&5.2 Click on **Urban**.

4&5.3 Click on **National Management Measures to Control Nonpoint Source Pollution from Urban Areas**. This will open a Web page that guides you through the contents of a large publication with detailed guidance on management methods to control nonpoint source and stormwater pollution from urban sources.

4&5.4 Look through the contents in the different chapters in this volume.

**Please list two ways you could get a copy of this guidance.**

1. \_\_\_\_\_

2. \_\_\_\_\_



## Other Urban Areas and Growth Management Publications

One of the most significant sources of stress on water resources is a result of the urban imprint on watersheds, due to growth patterns. Growth can be managed more carefully to ensure that water resources are protected. EPA offers guidance to show local government and interested citizens how different growth patterns and urban design elements can better protect water resources.

4&5.5 Go to the Smart Growth URL at [www.epa.gov/smartgrowth](http://www.epa.gov/smartgrowth).

4&5.6 On the left side-bar, click on **Publications**.

4&5.7 Click on **Water** and review the list of publications.



## Examples of Ordinances

Local ordinances have the potential to put in place regulated measures protective of land and water resources in communities. EPA offers a data bank of ordinances developed by places around the country which are protective of water resources and watersheds. Your community could use these ordinances as foundations for your own ordinance proposals and revisions.

4&5.8 Please go to the following URL: [www.epa.gov/owow/nps/ordinance/](http://www.epa.gov/owow/nps/ordinance/).

4&5.9 Check out model ordinances on Aquatic Buffers, Open Space Development, Illicit Discharges, Erosion and Sediment Control and others

4&5.10 Select **Open Space Development**. Open space development is an alternative site planning technique that concentrates dwelling units in a compact area. An introduction to the concept and techniques are provided. Below are examples of ordinances from communities in the country.

4&5.11 Interested in developing an ordinance? Click on the '**model open space ordinance**' link which takes you to a page that maps out key elements to be included in an ordinance.

## Step 6: Measure Progress and Make Necessary Adjustments

Learn how other communities and groups who have been addressing water pollution issues measure their progress.

- 6.1 Look at the Section 319 Nonpoint Source Success Stories (URL: [www.epa.gov/owow/nps/Success319/](http://www.epa.gov/owow/nps/Success319/)).
- 6.2 Click on a colored state and look at one of the success stories listed there. You may also look at reports from groups and communities that have received a **'Targeted Watershed Grant'** (URL: [www.epa.gov/twg](http://www.epa.gov/twg)).
- 6.3 Also, consider a success story from one of the National Estuary Programs (URL: [www.epa.gov/owow/estuaries/success.htm](http://www.epa.gov/owow/estuaries/success.htm)).